being brought nearer to the distinct Base of the Object Glass; and an Eye less Convex, the office of a less Convex Eye-Glass: but with this difference, that the more Convex the Eye is, the easier may any part of the Object be found, and the larger and more lucid it will appear.

I have seen *Saturn*'s Ring very plain with an Object-Glass of little more than six Foot *Radius*, without an Eye-Glass.

I have also found out a way for the *Presbytæ* to make use of an Object-Glass, by placing their Eye nearer the *Lens* than its *Focus*, by so much as their Eye is flatter than a common Eye, so as to make (as it were) the Telescope of *Galilæo*; the flat Eye serving as a common Eye arm'd with a Concave *Lens*. I have so fixed the Telescope, as to make a *Presbyta* read at a great distance a small Print. The truth of this may be easily demonstrated, if it be requir'd.

If this Experiment be made at Sea with a very large Tube, big enough to put in the Head and move it about, and the Object-Glass be also large, it may not perhaps be difficult to observe the Eclipses of the *Satellites* of *Jupiter*, which I would recommend to the Consideration of those that would try for the Longitude by such like Observations.

VI. *New and accurate Tables for the ready Computing of the* Eclipses *of the* first Satellite *of* Jupiter, *by Addition only. By the Reverend Mr* James Pound, R. S. S.

IN *Numb.* 214. of these *Transactions*, for the Months of *Novem* and *Decem.* 1694. we exhibited an Epitomy of Mr. *Cassini*'s curious Tables then newly published,

liſhed. for computing the Eclipſes of the *firſt Satellite* of *Jupiter*, without the help of any other Numbers. The eaſe of this *Calculus* gave great ſatisfaction to thoſe that delight in Teleſcope obſervations; and has been of good uſe to encourage Aſtronomers to aſcertain the Geographical Longitudes of many places, by help of theſe Eclipſes; whoſe frequency ſeems to afford us the propereſt means for that purpoſe.

But it being now 26 Years ſince thoſe Tables were publiſhed, length of Time has diſcovered that this *Satellites* motion is a ſmall matter ſwifter than M. *Caſſini* had ſuppoſed it; and the Reverend Mr. *Pound* being provided with all the Qualifications requiſite for ſuch a Work, has of late apply'd himſelf to rectify by frequent Obſervation what he found amiſs in the aforeſaid *Calculus*; and withal has put it into another Form yet much more eaſy and compendious, by bringing what M. *Caſſini* had given us in odd Numbers, to the Milleſimals of a Circle, both as to *Numb.* I. which he calls *Numb.* A. being the mean Anomalie of *Jupiter* in ſuch parts; as alſo to *Numb.* II. or our *Numb.* B. which is the diſtance of the mean place of *Jupiter*, from the true place of the *Sun*, and which with the addition of the Equation of *Numb.* B. gives the true angle of *Commutation* in the ſame Milleſimals of a Circle. And having deducted from the *Epoches* the greateſt Equations both of *Numb.* A and B. he reſtores them by adding as much to the Equations themſelves, by which means they all become Affirmative, ſo that the whole computation is performed by Addition only.

The Reader is ſuppoſed to be acquainted with the Method of M. *Caſſini*'s *Calculus*, which is at large explain'd in the aforeſaid *Tranſaction*, *Num.* 214. For which reaſon this ſhorter Deſcription may ſuffice at preſent.

EPOCHÆ

Epochæ Conjunctionum Primi Satellitis Cum Jove.

An. Jul. Curr.	Conjunct. D.	H.	′	″	Num. A.	Num. B.
1719	1	6	11	13	872	396
1720	0	20	22	40	956	310
21	1	5	2	44	40	229
22	0	19	14	11	125	143
23	0	9	25	38	209	57
1724	1	18	5	42	293	971
1725	0	8	17	10	377	889
26	1	16	57	13	462	808
27	1	7	8	41	546	722
28	0	21	20	8	630	636
1729	1	6	0	12	715	554
1730	0	20	11	39	799	468
31	0	10	23	7	883	382
32	0	0	34	34	967	296
33	0	9	14	38	52	215
1734	1	17	54	41	136	133
1735	1	8	6	9	220	47
36	0	22	17	36	305	961
37	1	6	57	40	389	880
38	0	21	9	7	473	794
1739	0	11	20	35	557	708
1740	0	1	32	2	642	622
41	0	10	12	6	726	540
42	0	0	23	33	810	454
43	1	9	3	37	895	373
1744	0	23	15	4	979	287
1745	1	7	55	8	63	205
46	0	22	6	35	148	119
47	0	12	18	3	232	33
48	0	2	29	30	316	947
1749	0	11	9	34	400	866

An. Jul. Curr.	Conjunct. D	H.	′	″	Num. A.	Num. B
1749	0	11	9	34	400	866
1750	0	1	21	1	485	780
51	1	10	1	5	569	698
52	1	0	12	33	653	612
53	1	8	52	37	738	531
1754	0	23	4	4	822	445
1755	0	13	15	32	906	359
56	0	3	27	0	990	273
57	0	12	7	3	75	191
58	0	2	18	30	159	110
1759	1	10	58	34	243	24
1760	1	1	10	1	328	938
61	1	9	50	35	412	856
62	1	0	1	2	496	770
63	0	14	13	0	580	684
1764	0	4	24	27	665	598
1765	0	13	4	31	749	517
66	0	3	15	58	833	431
67	1	11	56	2	918	349
68	1	2	7	29	2	263
1769	1	10	47	33	86	182
1770	1	0	59	0	171	96
71	0	15	10	28	255	10
72	0	5	21	56	339	924
73	0	14	2	0	423	842
1774	0	4	13	27	508	761
1775	1	12	53	31	592	675
76	1	3	4	58	676	589
77	1	11	45	1	761	507
78	1	1	56	28	845	421
1779	0	16	7	56	929	335

Revolutiones Primi Satellitis Jovis in menſibus.

Ianuarii. D.	h.	′	″	N. A.	Nu. B.
1	18	28	36	0	5
3	12	57	12	1	9
5	7	25	48	1	14
7	1	54	24	2	18
8	20	23	0	2	23
10	14	51	36	2	27
12	9	20	12	3	32
14	3	48	48	3	37
15	22	17	24	4	41
17	16	46	0	4	46
19	11	14	36	4	51
21	5	43	12	5	55
23	0	11	47	5	60
24	18	40	23	6	64
26	13	8	59	6	69
28	7	37	35	7	73
30	2	6	11	7	78
31	20	34	47	7	82
Februarii					
0	20	34	47	7	82
2	15	3	23	8	87
4	9	31	59	8	92
6	4	0	35	9	96
7	22	29	11	9	101
9	16	57	47	9	105
11	11	26	23	10	110
13	5	54	59	10	114

Februarii. D.	h.	′	″	N. A.	Nu. B.
15	0	23	35	11	118
16	18	52	11	11	123
18	13	20	47	11	128
20	7	49	23	12	132
22	2	17	59	12	137
23	20	46	35	13	141
25	15	15	11	13	146
27	9	43	47	13	150
Martii.					
1	4	12	23	14	155
2	22	40	59	14	159
4	17	9	35	15	164
6	11	38	10	15	168
8	6	6	46	16	173
10	0	35	22	16	177
11	19	3	58	16	182
13	13	32	34	17	186
15	8	1	10	17	190
17	2	29	46	18	195
18	20	58	22	18	199
20	15	26	58	18	204
22	9	55	34	19	208
24	4	24	10	19	213
25	22	52	46	20	217
27	17	21	22	20	221
29	11	49	58	20	225
31	6	18	34	21	230

Revolutiones Primi Satellitis Jovis in menſibus.

Aprilis. D.	h.	′	″	N. A.	Nu. B.
0	6	8	34	21	230
2	0	47	10	21	235
3	19	15	46	22	239
5	13	44	22	22	244
7	8	12	58	22	248
9	2	41	34	23	252
10	21	10	10	23	257
12	15	38	46	24	261
14	10	7	22	24	265
16	4	35	58	25	270
17	23	4	33	25	274
19	17	33		25	279
21	12	1	45	26	283
23	6	30	21	26	287
25	0	58	57	27	292
26	19	27	33	27	296
28	13	56	9	27	300
30	8	24	45	28	304
Maii.					
0	8	24	45	28	304
2	2	53	21	28	309
3	21	21	57	29	313
5	15	50	33	29	317
7	10	19	9	29	322
9	4	47	45	30	326
10	23	16	21	30	330
12	17	44	57	31	335
14	12	13	33	31	339

Maii. D.	h.	′	″	N. A.	Nu. B.
16	6	42	9	31	343
18	1	10	45	32	348
19	19	39	21	32	352
21	14	7	57	33	356
23	8	36	33	33	361
25	3	5	9	33	365
26	21	33	45	34	369
28	16	2	21	34	373
30	10	30	57	35	378
Junii					
0	10	30	57	35	378
1	4	59	32	35	382
2	23	28	8	36	386
4	17	56	44	36	391
6	12	25	20	36	395
8	6	53	56	37	399
10	1	22	32	37	403
11	19	51	8	38	408
13	14	19	44	38	412
15	8	48	20	38	416
17	3	16	56	39	420
18	21	45	32	39	425
20	16	14	8	40	429
22	10	42	44	40	433
24	5	11	20	40	438
25	23	39	56	41	442
27	18	8	32	41	446
29	12	37	8	42	450

Revolutiones Primi Satellitis Jovis in minutis.

Julii D.	h.	′	″	N. A.	Nu. B.
1	7	5	44	42	455
3	1	34	20	42	459
4	20	2	56	43	463
6	14	31	32	43	468
8	9	0	8	44	472
10	3	28	44	44	476
11	21	57	20	45	480
13	16	25	55	45	485
15	10	54	31	45	489
17	5	23	7	46	493
18	23	51	43	46	498
20	18	20	19	47	502
22	12	48	55	47	506
24	7	17	31	47	510
26	1	46	7	48	515
27	20	14	43	48	519
29	14	43	19	49	523
31	9	11	55	49	528
Auguſti.					
0	9	11	55	49	528
2	3	40	31	49	532
3	22	9	7	50	536
5	16	37	43	50	541
7	11	6	19	51	545
9	5	34	55	51	549
11	0	3	31	51	554
12	18	32	7	52	558
14	13	0	43	52	562

Auguſti. D.	h.	′	″	N. A.	Nu B.
16	7	29	19	53	567
18	1	57	55	53	571
19	20	26	31	54	575
21	14	55	7	54	580
23	9	23	43	54	584
25	3	52	18	55	588
26	22	20	54	55	593
28	16	49	30	56	597
30	11	18	6	56	602
Septembris.					
1	5	46	42	56	606
3	0	15	18	57	610
4	18	43	54	57	615
6	13	12	30	58	619
8	7	41	6	58	624
10	2	9	42	58	628
11	20	38	18	59	632
13	15	6	54	59	637
15	9	35	30	60	641
17	4	4	6	60	646
18	22	32	42	60	650
20	17	1	18	61	655
22	11	29	54	61	659
24	5	58	30	62	663
26	0	27	6	62	668
27	18	55	42	62	672
29	13	24	18	63	677

Revolutiones Primi Satellitis Jovis in menſibus.

Octobris. D.	h.	′	″	N. A.	Nu. B.
1	7	52	54	63	681
3	2	21	30	64	686
4	20	50	6	64	690
6	15	18	41	65	695
8	9	47	17	65	699
10	4	15	53	65	704
11	22	44	29	66	708
13	17	13	5	66	713
15	11	41	41	67	717
17	6	10	17	67	721
19	0	38	53	67	726
20	19	7	29	68	730
22	13	36	5	68	735
24	8	4	41	69	739
26	2	33	17	69	744
27	21	1	53	69	749
29	15	30	29	70	753
31	9	59	5	70	758
Novembris.					
0	9	59	5	70	758
2	4	27	41	71	762
3	22	56	17	71	767
5	17	24	53	71	772
7	11	53	29	72	776
9	6	22	5	72	781
11	0	50	41	73	785
12	19	19	17	73	790
14	13	47	53	74	794

Novembris. D.	h.	′	″	N. A.	Nu. B.
16	8	16	29	74	799
18	2	45	5	74	804
19	21	13	40	75	808
21	15	42	16	75	813
23	10	10	52	76	817
25	4	39	28	76	822
26	23	8	4	76	827
28	17	36	40	77	831
30	12	5	16	77	836
Decembris.					
0	12	5	16	77	836
2	6	33	52	78	840
4	1	2	28	78	845
5	19	31	4	78	849
7	13	59	40	79	854
9	8	28	16	79	859
11	2	56	52	80	863
13	21	25	28	80	868
14	15	54	4	80	873
16	10	22	40	81	877
18	4	51	16	81	882
19	23	19	52	82	886
21	17	48	28	82	891
23	12	17	4	82	897
25	6	45	40	83	900
27	1	14	16	83	905
28	19	42	52	84	909
30	14	11	28	84	914

Primæ Æquationes Conjunctionum Primi Satellitis cum Jove.

Num. A.	Æquat. Conjun. Adde. ′ ″	Æq Nu. B	Num. A.	Æquat. Conjun. Adde. ′ ″	Æq Nu. B	Num. A.	Æquat. Conjun. Adde. ′ ″	Æq Nu. B.	Num. A.	Æquat. Conjun. Adde. ′ ″	Æq Nu. B.
0	39 8	15	128	12 7	26	256	0 1	31	384	11 52	26
4	38 12	16	132	11 27	26	260	0 0	31	388	12 37	26
8	37 16	16	136	10 47	26	264	0 1	31	392	13 23	25
12	36 21	16	140	10 9	27	268	0 3	31	396	14 11	25
16	35 26	17	144	9 31	27	272	0 7	31	400	14 59	25
20	34 30	17	148	8 45	27	276	0 12	31	404	15 48	24
24	33 35	17	152	8 19	27	280	0 19	31	408	16 38	24
28	32 40	18	156	7 44	28	284	0 28	30	412	17 30	24
32	31 45	18	160	7 10	28	288	0 38	30	416	18 22	23
36	30 50	19	164	6 38	28	292	0 50	30	420	19 15	23
40	29 56	19	168	6 7	28	296	1 3	30	424	20 9	23
44	29 3	19	172	5 37	28	300	1 17	30	428	21 4	22
48	28 10	20	176	5 8	29	304	1 33	30	432	22 59	22
52	27 16	20	180	4 41	29	308	1 50	30	436	22 55	22
56	26 23	20	184	4 15	29	312	2 8	30	440	23 53	21
60	25 30	21	188	3 49	29	316	2 28	30	444	24 51	21
64	24 38	21	192	3 24	29	320	2 51	30	448	25 49	21
68	23 47	21	196	3 1	29	324	3 15	29	452	26 48	20
72	22 56	22	200	2 40	30	328	3 40	29	456	27 48	20
76	22 5	22	204	2 20	30	332	4 6	29	460	28 48	19
80	21 15	22	208	2 1	30	336	4 34	29	464	29 49	19
84	20 26	23	212	1 42	30	340	5 3	29	468	30 50	19
88	19 37	23	216	1 25	30	344	5 34	29	472	31 51	18
92	18 48	23	220	1 10	30	348	6 5	28	476	32 53	18
96	18 0	24	224	0 58	30	352	6 38	28	480	33 55	17
100	17 14	24	228	0 47	30	356	7 13	28	484	34 57	17
104	16 28	24	232	0 36	30	360	7 50	28	488	35 59	17
108	15 42	24	236	0 26	30	364	8 27	27	492	37 1	16
112	14 57	25	240	0 18	30	368	9 6	27	496	38 5	16
116	14 13	25	244	0 12	31	372	9 46	27	500	39 8	15
120	13 30	25	248	0 7	31	376	10 27	27	504	40 11	15
124	12 48	26	252	0 4	31	380	11 9	26	508	41 15	14
128	12 7	26	256	0 1	31	384	11 52	26	512	42 17	14

Primæ

Primæ Æquationes Conjunctionum Primi Satellitis cum Jove.

Num. A.	Æquat. Conjunct. Adde. ′ ″	Æq Nu. B.	Num. A.	Æquat. Conjun. Adde. ′ ″	Æq Nu. B.	Num. A.	Æquat. Conjun. Adde. ′ ″	Æq Nu. B.	Num. A.	Æquat. Conjun. Adde. ′ ″	Æq Nu. B.
512	42 17	14	640	70 26	3	768	77 40	0	896	61 48	6
516	43 19	14	644	71 3	3	772	77 29	0	900	61 2	7
520	44 21	13	648	71 38	3	776	77 18	0	904	60 15	7
524	45 23	13	652	72 11	2	780	77 6	0	908	59 28	7
528	46 25	13	656	72 42	2	784	76 51	1	912	58 39	8
532	47 26	12	660	73 13	2	788	76 34	1	916	57 50	8
536	48 27	12	664	73 42	2	792	76 15	1	920	57 1	8
540	49 28	11	668	74 10	2	796	75 56	1	924	56 11	9
544	50 28	11	672	74 36	1	800	75 36	1	928	55 20	9
548	51 28	11	676	75 1	1	804	75 15	1	932	54 29	9
552	52 27	10	680	75 25	1	808	74 52	1	936	53 38	10
556	53 25	10	684	75 48	1	812	74 27	1	940	52 46	10
560	54 23	9	688	76 8	1	816	74 1	2	944	51 53	10
564	55 21	9	692	76 26	1	820	73 35	2	948	51 0	11
568	56 17	9	696	76 43	0	824	73 8	2	952	50 6	11
572	57 12	8	700	76 59	0	828	72 39	2	956	49 13	11
576	58 7	8	704	77 13	0	832	72 9	2	960	48 20	12
580	59 1	8	708	77 26	0	836	71 38	3	964	47 26	12
584	59 54	7	712	77 38	0	840	71 6	3	968	46 31	12
588	60 46	7	716	77 48	0	844	70 32	3	972	45 36	13
592	61 38	6	720	77 57	0	848	69 57	3	976	44 41	13
596	62 28	6	724	78 4	0	852	69 21	3	980	43 46	13
600	63 17	6	728	78 9	0	856	68 45	4	984	42 50	14
604	64 5	5	732	78 13	0	860	68 7	4	988	41 55	14
608	64 53	5	736	78 15	0	864	67 29	4	992	41 0	14
612	65 39	5	740	78 16	0	868	66 49	4	996	40 4	15
616	66 24	5	744	78 15	0	872	66 9	5	1000	39 8	15
620	67 7	4	748	78 12	0	876	65 28	5	1004	38 12	16
624	67 49	4	752	78 9	0	880	64 46	5	1008	37 16	16
628	68 30	4	756	78 4	0	884	64 3	5	1012	36 21	16
632	69 10	4	760	77 58	0	888	63 19	6	1016	35 26	17
636	69 49	3	764	77 50	0	892	62 34	6	1020	34 30	17
640	70 26	3	768	77 40	0	896	61 48	6	1024	33 35	17

Secundæ Æquationes Conjunctionum Primi Satellitis cum Jove.

Addendæ.

Num. B. Æqu.	0		100		200		300		400		500		600		700		800		900	
	Æqu.		*Æqu.*		*Æq*		*Æq.*		*Æq.*		*Æq.*		*Æq.*		*Æq.*		*Æqu.*		*Æqu.*	
	′	″	′	″	′	″	′	″	′	″	′	″	′	″	′	″	′	″	′	″
0	14	0	12	52	9	45	5	30	1	37	0	0	1	37	5	30	9	45	12	52
4	14	0	12	46	9	36	5	20	1	30	0	0	1	44	5	40	9	54	12	58
8	13	59	12	40	9	26	5	9	1	23	0	1	1	52	5	51	10	3	13	2
12	13	59	12	35	9	17	4	59	1	16	0	2	1	59	6	1	10	12	13	7
16	13	58	12	29	9	7	4	48	1	9	0	3	2	7	6	11	10	21	13	11
20	13	57	12	23	8	58	4	38	1	3	0	4	2	15	6	22	10	31	13	16
24	13	56	12	17	8	48	4	28	0	57	0	5	2	24	6	33	10	40	13	20
28	13	54	12	11	8	38	4	18	0	52	0	7	2	32	6	44	10	49	13	25
32	13	53	12	4	8	28	4	8	0	46	0	10	2	41	6	55	10	57	13	29
36	13	51	11	56	8	17	3	58	0	40	0	13	2	50	7	5	11	5	13	33
40	13	49	11	49	8	7	3	58	0	35	0	16	2	59	7	16	11	13	13	36
44	13	47	11	42	7	57	3	38	0	31	0	19	3	9	7	26	11	20	13	38
48	13	44	11	34	7	47	3	29	0	27	0	23	3	19	7	36	11	27	13	41
52	13	41	11	27	7	36	3	19	0	23	0	27	3	29	7	47	11	34	13	44
56	13	38	11	20	7	26	3	9	0	19	0	31	3	38	7	57	11	42	13	47
60	13	36	11	13	7	16	2	59	0	16	0	35	3	48	8	7	11	49	13	49
64	13	33	11	5	7	5	2	50	0	13	0	40	3	58	8	17	11	56	13	51
68	13	29	10	57	6	55	2	41	0	10	0	46	4	8	8	28	12	4	13	53
72	13	25	10	49	6	44	2	32	0	7	0	52	4	18	8	38	12	11	13	54
76	13	20	10	40	6	33	2	24	0	5	0	57	4	28	8	48	12	17	13	56
80	13	16	10	31	6	22	2	15	0	4	1	3	4	38	8	58	12	23	13	57
84	13	11	10	21	6	11	2	7	0	3	1	9	4	48	9	7	12	29	13	58
88	13	7	10	12	6	1	1	59	0	2	1	16	4	59	9	17	12	35	13	59
92	13	2	10	3	5	51	1	52	0	1	1	23	5	9	9	26	12	40	13	59
96	12	58	9	54	5	40	1	44	0	0	1	30	5	20	9	36	12	46	14	0
100	12	52	9	45	5	30	1	37	0	0	1	37	5	30	9	45	12	52	14	0

Tertiæ Æquationes Addendæ.

Nu. A.	*Æquationes.* ′ ″	*Num. A.*
0	3 30	1000
20	3 29	980
40	3 28	960
60	3 25	940
80	3 19	920
100	3 12	900
120	3 4	880
140	2 56	860
160	2 46	840
180	2 34	820
200	2 22	800
220	2 10	780
240	1 57	760
260	1 44	740
280	1 30	720
300	1 17	700
320	1 5	680
340	0 53	660
360	0 41	640
380	0 31	620
400	0 22	600
420	0 14	580
440	0 8	560
460	0 4	540
480	0 2	520
500	0 0	500

Semidurationes Eclipſium Primi Satellitis Jovis.

Nu. A.	*Semidurationes.* H. ′ ″	*Nu. A.*	*Semidurationes.* H. ′ ″	*Nu. A.*	*Semidurationes* H. ′ ″	*Nu. A.*	*Semidurationes.* H. ′ ″
0	1 5 9	250	1 7 0	500	1 5 9	750	1 7 46
10	1 4 56	260	1 7 15	510	1 4 53	760	1 7 57
20	1 4 44	270	1 7 31	520	1 4 39	770	1 8 7
30	1 4 33	280	1 7 45	530	1 4 26	780	1 8 15
40	1 4 23	290	1 7 57	540	1 4 15	790	1 8 22
50	1 4 13	300	1 8 7	550	1 4 7	800	1 8 26
60	1 4 7	310	1 8 15	560	1 4 3	810	1 8 28
70	1 4 4	320	1 8 22	570	1 4 1	820	1 8 30
80	1 4 2	330	1 8 27	580	1 4 0	830	1 8 28
90	1 4 0	340	1 8 28	590	1 4 3	840	1 8 26
100	1 4 2	350	1 8 29	600	1 4 7	850	1 8 22
110	1 4 3	360	1 8 27	610	1 4 13	860	1 8 16
120	1 4 6	370	1 8 24	620	1 4 23	870	1 8 8
130	1 4 12	380	1 8 17	630	1 4 35	880	1 8 0
140	1 4 21	390	1 8 9	640	1 4 49	890	1 7 50
150	1 4 31	400	1 7 58	650	1 5 4	900	1 7 37
160	1 4 42	410	1 7 46	660	1 5 19	910	1 7 22
170	1 4 55	420	1 7 31	670	1 5 36	920	1 7 8
180	1 5 9	430	1 7 14	680	1 5 54	930	1 6 55
190	1 5 23	440	1 6 58	690	1 6 10	940	1 6 40
200	1 5 39	450	1 6 40	700	1 6 28	950	1 6 23
210	1 5 55	460	1 6 20	710	1 6 46	960	1 6 8
220	1 6 11	470	1 6 2	720	1 7 2	970	1 5 54
230	1 6 26	480	1 5 45	730	1 7 17	98	1 5 37
240	1 6 43	490	1 5 26	740	1 7 33	990	1 5 22
250	1 7 0	500	1 5 9	750	1 7 46	1000	1 5 9

The Uſe of the foregoing TABLES.

THE Eclipſes of the firſt Satellite of *Jupiter*, as has been already ſaid, afford the beſt means of determining the Longitude of places on the Land, where Teleſcopes of a convenient length may be uſed; thirteen of theſe Eclipſes happening every 23 Days; but it is requiſite that the Obſerver know near the matter when theſe opportunities offer themſelves, leaſt on the one hand he let them ſlip, or elſe grow weary by a too long attendance on them.

Thoſe therefore who are curious to obſerve them, may readily compute the times of the Immerſions or Emerſions of this Satellite, and that with great exactneſs, by the following very ſhort Precepts, which admit of no Exception or Caution, *viz.*

Out of the firſt Table take the *Epoche* for the Year, with its correſponding *Numb.* A and *Numb.* B; and to them add, out of the Tables of Months, the Day, Hour, Minute and Second, neareſt leſs than the time of the Eclipſe you ſeek for, together with its *Num.* A and B: the Sum of the times is the mean time of the middle of the Eclipſe. 2. With *Num.* A thus collected take out the firſt Æquation of the Conjunctions; as alſo the Æquation of *Num.* B. always to be added to *Num.* B. before found. 3. With *Num* B ſo equated, take out the ſecond Æquation of the Conjunctions; and in the laſt Table, the third Æquation, as alſo the Semi-duration of the Eclipſe anſwering to *Num.* A. 4. To the mean time of the middle of the Eclipſe, add all thoſe three Æquations; the Sum ſhall be the true equated time of the middle of the Eclipſe ſought. 5. If *Num.* B. equated be leſs than 500, ſubtract the

the Semiduration, and you will have the time of the Immerſion, or if it be more than 500, adding the ſame, it will give the time of the Emerſion

But Note, the times thus found are equal time, ſtill to be reduced to the Apparent: and that in the *Biſſextile* Year, after *February*, one Day is to be deducted from the Day of the Month.

The leſs skilful may perhaps be p'eas'd with an Example or two, which may ſerve them to imitate. Let it be required to find the time of the Immerſion of this Satellite into *Jupiter*'s ſhadow, *November* the *9th* 1719. in the Morning. The Work ſtands thus,

	D. h. ′ ″	Nu. A.	Nu. B.	
1719.	1 . 6 . 11 . 13	872	396	
Novemb.	7 . 11 . 53 . 29	72	776	
Conj. Med.	8 . 18 . 4 . 42	944	172	
Æquat. I.	51 . 53		10	Æq. B.
Æquat. II.	10 . 26		182	B. Æquat.
Æquat. III.	3 . 26			
	8 . 19 . 10 . 27			
	1 . 6 . 33	*Semidur. Subſt.*		
Novemb.	8 . 18 . 3 . 54			

So that by this *Calculus*, on the ninth of *Novemb.* at 4 Minutes after 6 in the Morning, equal Time, may be ſeen the *Immerſion* of this Satellite into *Jupiter*'s ſhadow.

Another Example ſhall be of the *Emerſion* on the fifth of *April* 1720. *viz.*

	D. h. ′ ″	Nu. A.	Nu. B.	
1720.	0.20.22.40	956	310	
April	4.13.44.22	Biſs. 22	244	
Conj. Med.	5.10.07.02	978	554	
Æquat. I.	44.13		13	Æq. B.
Æquat. II.	0.45		567	B. Æquat.
Æquat. III.	3.29			
	1. 5.40	*Semidur. Add.*		
April	5.12.01.09			

Hence it appears that at one Minute after Midnight following the fifth of *April*, equal Time, will happen the Emerſion required. Nor do we doubt but that the Event will very nearly anſwer.

Laſtly, it may not be amiſs here to inform the Reader, that we have learnt, by the experience of many Years Obſervation, that the ſecond inequality of this Satellite proceeds from the progreſſive Propagation of Light, and is common to all the reſt of the Satellites: Light, being found to proceed in about ſeven Minutes of time as far as from the Sun to the Earth, whether with an equable motion or otherwiſe is ſtill a queſtion. For this reaſon we have added a *Third Æquation*, whereby to account for the greater diſtance of *Jupiter* from the *Earth* in *Aphelio* than in *Perihelio*, as the *Second Æquation* anſwers to the greater diſtance of the Planet when near the Conjunction of the Sun, than when near his Oppoſition.

F I N I S.

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